Black Sea Bass Fishery Information Document

June 2015

This document provides a brief overview of the biology, stock condition, management system, and fishery performance for black sea bass with an emphasis on 2014, the most recent complete fishing year.

1. Biology

Black sea bass (*Centropristis striata*) are distributed from the Gulf of Maine through the Gulf of Mexico. Adults and juveniles are mostly found on the continental shelf, but young of the year (i.e. fish less than one year old) can be found in estuaries. Adults prefer to be near structures such as rocky reefs, coral patches, cobble and rock fields, mussel beds, and shipwrecks. Adults in the Mid-Atlantic show strong site fidelity during the summer but migrate to offshore wintering areas south of New Jersey when water temperatures decrease in the fall. Adults in the South Atlantic and Gulf of Mexico do not migrate during the winter.[1]

Black sea bass are protogynous hermaphrodites, meaning that they are born female but later transition to males, usually around 2-5 years of age. Male black sea bass are either of the dominant or subordinate type. Dominant males are larger than subordinate males and develop a bright blue nuccal hump during the spawning season. About half of black sea bass are sexually mature by 2 or 3 years of age and about 20 cm in length. Most black sea bass greater than 19 cm are either in a transitional stage between female and male or have fully transitioned to the male stage. Studies have shown that fishing pressure can decrease the age of transition from female to male. Black sea bass reach a maximum size of about 60 cm and a maximum age of about 12 years.[1,2]

Black sea bass in the Mid-Atlantic spawn in nearshore continental shelf areas at depths of 20-50 meters. Spawning usually takes place between April and October. During the summer, adult black sea bass share complex coastal habitats with tautog, hakes, conger eel, sea robins and other migratory fish species. Essential Fish Habitat (EFH) for black sea bass consists of pelagic waters, structured habitat, rough bottom, shellfish, sand, and shell, from the Gulf of Maine through Cape Hatteras, North Carolina. Juvenile and adult black sea bass mostly feed on crustaceans, small fish, and squid. The NEFSC food habits database lists spiny dogfish, Atlantic angel shark, skates, spotted hake, summer flounder, windowpane, and goosefish as predators of black sea bass. [1]

2. Status of the Stock

The protogynous life history (i.e. transitioning from female to male) and structure-orienting behavior of black sea bass make them difficult species to assess with analytical stock assessment models. Most stock assessments of mid-Atlantic species rely heavily on data collected during the Northeast Fisheries Science Center's biannual bottom trawl survey. This survey largely avoids

areas with structures that could damage the trawl gear, such as rocky outcroppings and reefs. Black sea bass prefer to be near such structures and so they are, for the most part, not susceptible to capture by the trawl survey.[2]

The northern stock of black sea bass (i.e. black sea bass north of Cape Hatteras, North Carolina) was designated as overfished in 2000, and was under a stock rebuilding strategy from 2000 until 2009. In 2009, the stock was declared rebuilt after a 2008 stock assessment indicated that it was not overfished and overfishing was not occurring in 2007. The peer review panel which reviewed this assessment approved it for use in management but cautioned that there was "considerable uncertainty with respect to stock status". The panel recommended that the Council "allow for the sizeable uncertainty in stock status when establishing catch limits".[2]

When the assessment model was updated in 2012, it was determined that the stock was not overfished and that overfishing was not occurring in 2011 (Figures 1 and 2).[3]

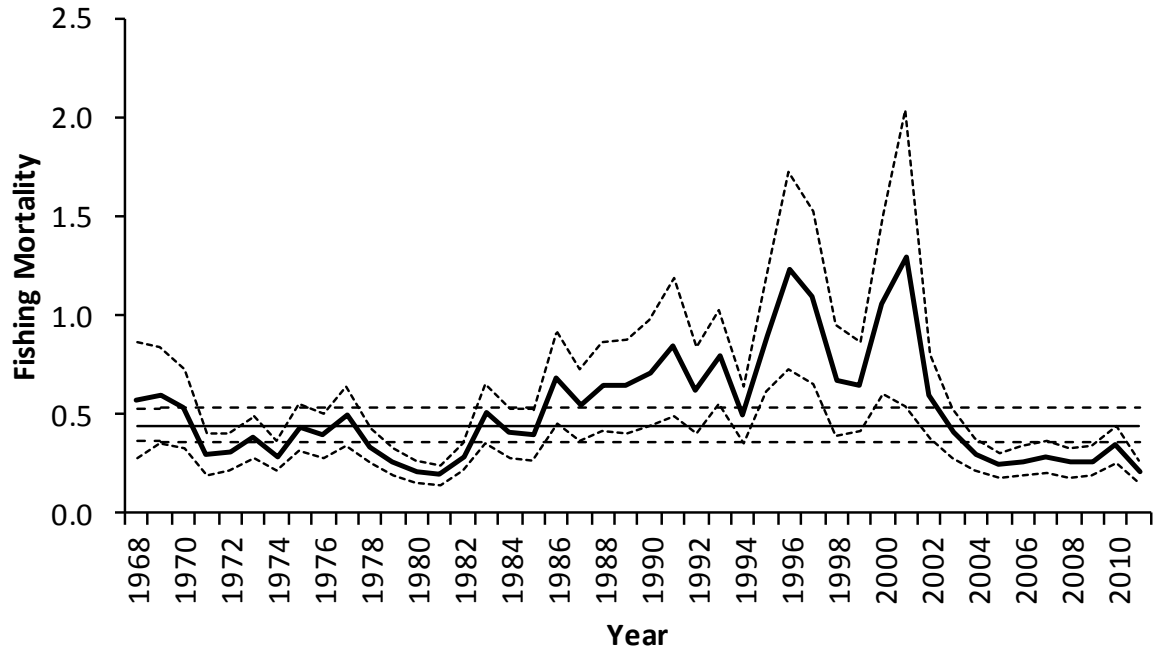

Figure 1: Estimated fishing mortality rate (F; +/- 2 standard deviations) of black sea bass from 1968-2011. Horizontal lines represent F_{MSY} and an 80% confidence interval.[3]

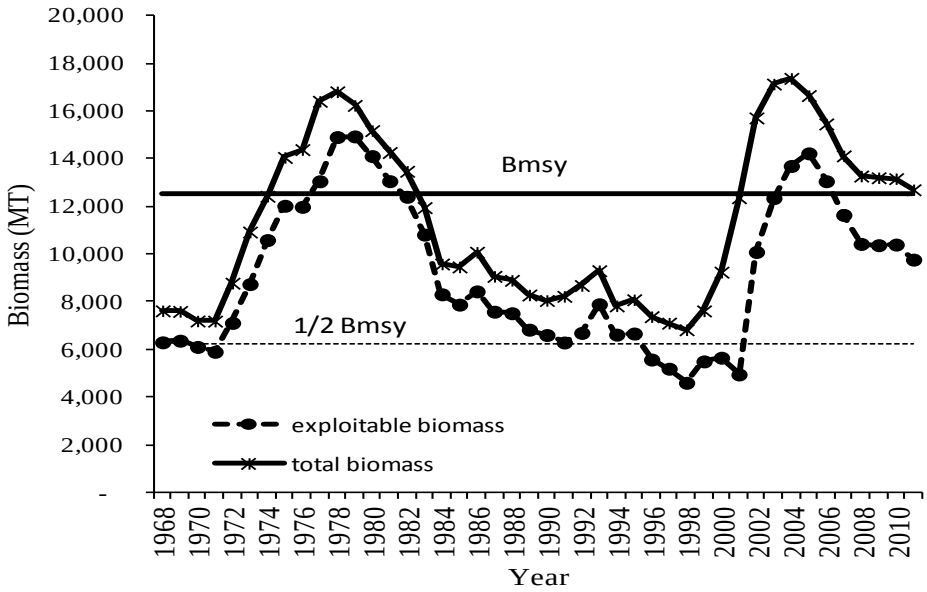

Figure 2: Estimated black sea bass total and exploitable biomass, 1968-2011. B_{MSY} is the biomass target, and ½ B_{MSY} is the minimum biomass threshold, below which the stock is considered overfished.[3]

3. Management System and Overall Fishery Performance

The Mid-Atlantic Fishery Management Council (MAFMC or Council) and the Atlantic States Marine Fisheries Commission (ASMFC or Commission) work cooperatively to develop fishery regulations for black sea bass off the east coast of the United States. The Council and Commission work in conjunction with the National Marine Fisheries Service (NMFS), which serves as the federal implementation and enforcement entity. This cooperative management endeavor was developed because a significant portion of the catch is taken from both state waters (0-3 miles offshore) and federal waters (3-200 miles offshore, also known as the Exclusive Economic Zone or EEZ). The management unit for black sea bass includes U.S. waters from Cape Hatteras, North Carolina to the U.S.-Canadian border.

The Council has managed back sea bass since 1997 when it amended the Summer Flounder and Scup Fishery Management Plan (FMP) to include black sea bass. The original FMP and subsequent amendments and frameworks are available at: www.mafmc.org/fisheries/fmp/sf-s-bsb.

Commercial and recreational black sea bass fisheries are managed using catch and landings limits, commercial quotas, recreational harvest limits, minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. The Council allocates 49% of the total allowable landings of black sea bass to the commercial fishery as a commercial quota and 51% of allowable landings to the recreational fishery as a recreational harvest limit.

The Council's Scientific and Statistical Committee (SSC) recommends annual Acceptable Biological Catch (ABC) levels for black sea bass, which are then approved by the Council and Commission and submitted to NMFS. The ABC is divided into commercial and recreational Annual Catch Limits (ACLs), based on the landings allocation prescribed in the FMP and the recent

distribution of discards between the commercial and recreational fisheries. The Council first implemented recreational and commercial ACLs, with a system of overage accountability, in 2012. Both ABCs and ACLs include both projected landings and discards. Projected discards are subtracted to determine the commercial quota and recreational harvest limit, which are landings-based limits. Black sea bass catch and landings limits for the past ten years are shown in Table 1.

Total black sea bass landings (commercial and recreational) peaked in 1986, when approximately 15.8 million pounds of black sea bass were landed (Figure 3). About 6.16 million pounds of black sea bass were landed by commercial and recreational fishermen from Maine to North Carolina in 2014.[4,5]

Table 1: Summary of catch limits, landings limits, and landings for commercial and recreational black sea bass fisheries and landings from 2005 through 2015.

Management measures	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ABC (millions of lb) [a]	--	--	--	--	--	4.50	4.50	4.50	5.50	5.50	5.50
Commercial ACL (millions of lb)[b]	--	--	--	--	--	--	--	1.98	2.60	2.60	2.60
Commercial quota (millions of lb)[c]	3.95	3.83	2.38	2.03	1.09	1.76	1.71	1.71	2.17	2.17	2.21
Commercial landings (millions of lb)	2.87	2.84	2.29	1.93	1.17	1.75	1.69	1.72	2.26	2.38	--
% of commercial quota landed	73%	74%	96%	95%	107%	99%	99%	101%	104%	110%	--
Recreational ACL (millions of lb)[b]	--	--	--	--	--	--	--	1.86	2.90	2.90	2.90
Recreational harvest limit (millions of lb)[c]	4.13	3.99	2.47	2.11	1.14	1.83	1.78	1.32	2.26	2.26	2.33
Recreational landings (millions of lb)[d]	2.18	1.91	2.34	2.09	2.67	3.36	1.27	3.31	2.39	3.78	--
% of recreational limit harvested	53%	48%	95%	99%	234%	184%	71%	251%	106%	167%	--

[a] The ABC is the Acceptable Biological Catch, recommended by the SSC and approved by the Council. The ABC is divided into commercial and recreational annual catch limits (ACLs), based on the allocation percentages prescribed in the FMP.

[b] The ACLs (Annual Catch Limits) are annual sector-specific catch limits for the commercial and recreational fisheries. The ACLs include both landings and discards.

[c] For 2005-2014, commercial quotas and recreational harvest limits are adjusted for both Research Set Aside (RSA) and projected discards. Quotas and harvest limits for 2015 do not reflect an adjustment for RSA, as the program was suspended for 2015.

[d] Includes landings for all of North Carolina.

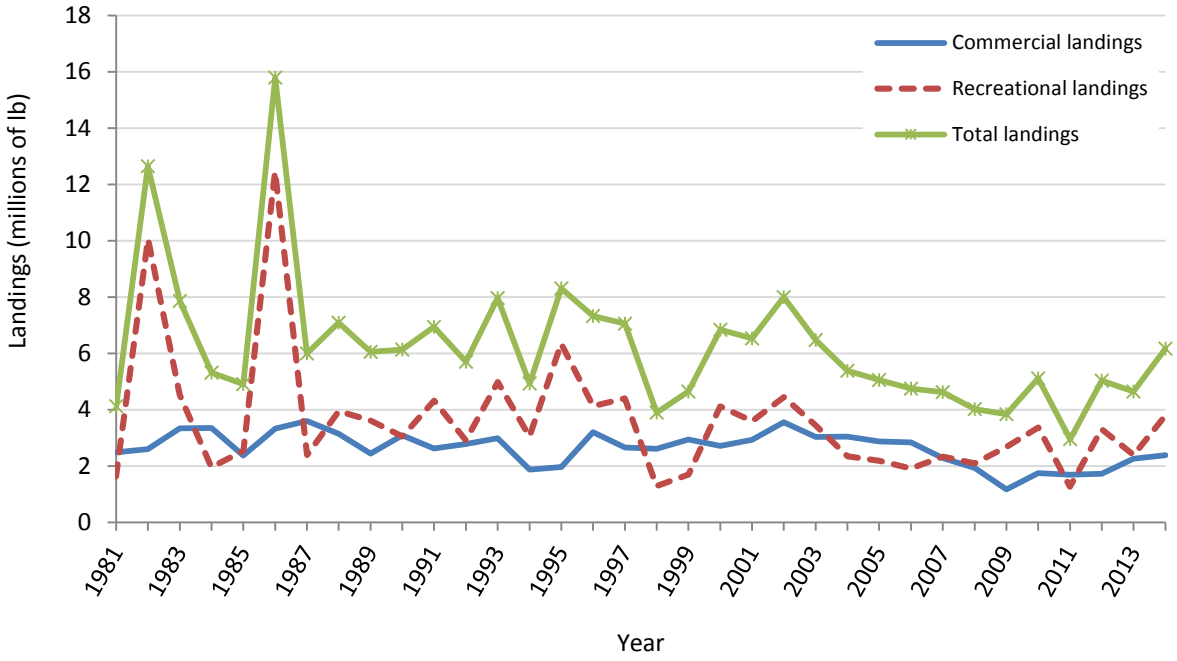

Figure 3: Commercial and recreational black sea bass landings in millions of pounds from Maine to North Carolina, 1981-2014.[4,5]

4. Commercial Black Sea Bass Measures and Fishery Performance

Commercial landings of black sea bass peaked in 1987 at 3.61 million pounds, and reached a low of 1.17 million pounds in 2009 (Figure 3). In 2014, commercial fishermen landed approximately 2.38 million pounds of black sea bass (corresponding to 110% of the commercial quota).[4]

A moratorium permit is required to fish commercially for black sea bass in federal waters. In 2014, 743 vessels held federal commercial black sea bass permits.[6]

The minimum commercial size limit for black sea bass of 11 inches total length has been in place since 2002. The ASMFC divides the black sea bass commercial quota among the states based on the allocation percentages given in Table 2, and states set measures to achieve their state-specific commercial quotas.

Table 2: Allocation of commercial black sea bass quota among states.

State	Allocation (percent)
Maine	0.5
New Hampshire	0.5
Massachusetts	13.0
Rhode Island	11.0
Connecticut	1.0
New York	7.0
New Jersey	20.0
Delaware	5.0
Maryland	11.0
Virginia	20.0
North Carolina	11.0
Total	100

In 2014, about 64% of the commercial black sea bass caught by federal permit holders from Maine to North Carolina was caught with bottom otter trawl gear. About 21% were caught with fish pots and traps, 8% in offshore lobster traps, and about 5% with hand lines. Other gear types accounted less than 1% each of total commercial landings.[7]

Any vessel which uses otter trawl gear and catches more than 500 pounds of black sea bass from January through March, or more than 100 pounds from April through December, must use nets with a minimum mesh size of 4.5 inch diamond mesh applied throughout the codend for at least 75 continuous meshes forward of the end of the net. Pots and traps used to target black sea bass commercially must have two escape vents with degradable hinges in the section known as the parlor. The escape vents must measure 1.375 inches by 5.75 inches if rectangular, 2 inches by 2 inches if square, or have a diameter of 2.5 inches if circular.

Vessel trip report (VTR) data suggest that statistical area 621 was responsible for the largest percentage of commercial black sea bass catch in 2014. Most of the trips during which black sea bass were caught took place in statistical area 616 (Table 3, Figure 4).[7]

Table 3: Statistical areas that accounted for at least 5% of the total commercial black sea bass catch in 2014, with associated number of trips.[7]

Statistical Area	Percent of 2014 Commercial Black Sea Bass Catch	Number of Trips
621	31%	182,233
616	13%	587,417
622	10%	91,198
538	6%	49,229
632	6%	35,682

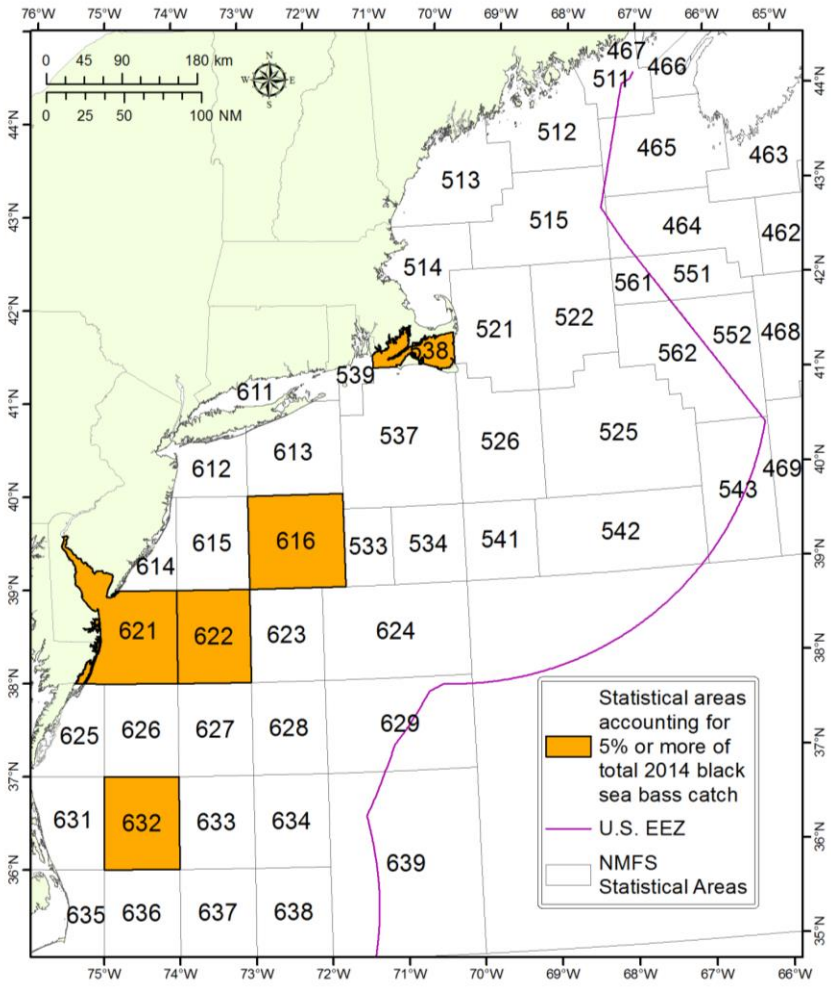

Figure 4: NMFS Statistical Areas, highlighting those that each accounted for more than 5% of the commercial black sea bass catch in 2014.[7]

Over the past two decades, total black sea bass ex-vessel value from Maine to North Carolina has ranged from a low of $3.69 million in 1994 (adjusted to real 2014 dollars to account for inflation) to a high of $9.64 million in 2006. Black sea bass reached its lowest average annual price per pound in 1996, at $1.14 ($1.83 in 2014 dollars). It reached its highest average annual price per pound in 2012, at $3.33 ($3.39 in 2014 dollars; Figure 5).[4]

In 2014, 2.38 million pounds of black sea bass were landed in the commercial fishery, generating $7.70 million in revenues at an average price of $3.24 per pound (Figure 5).[4]

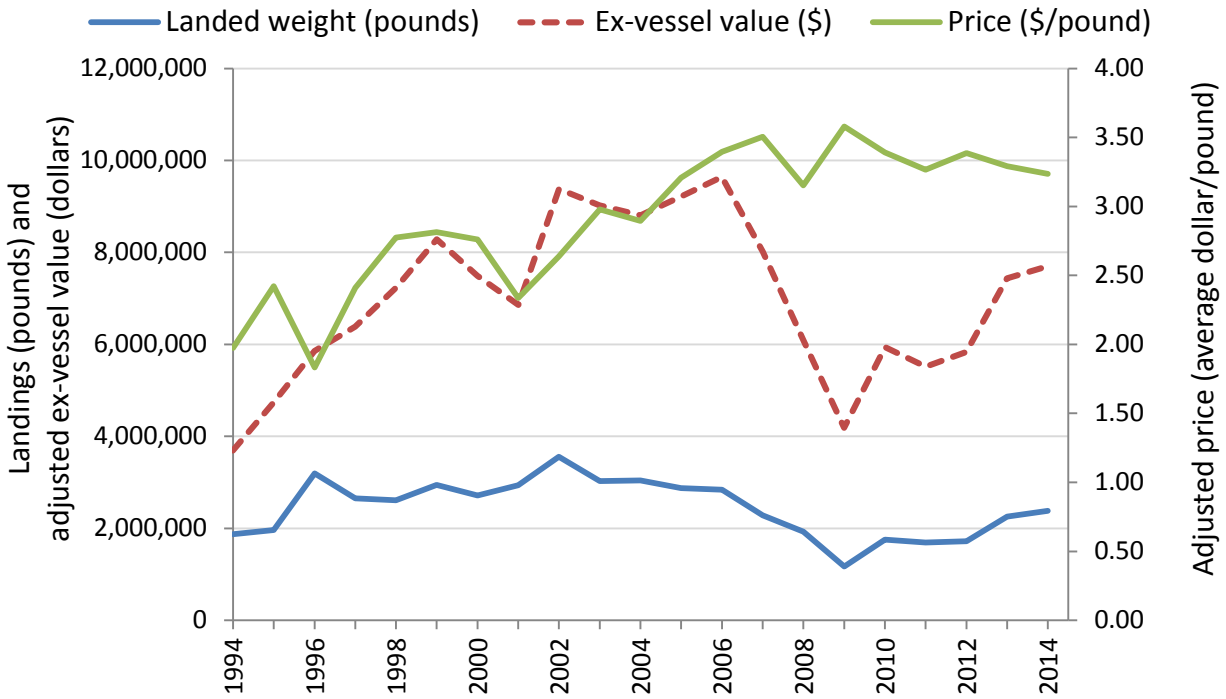

Figure 5: Landings, ex-vessel value, and price for black sea bass, from Maine through North Carolina, 1994-2014. Ex-vessel value and price are adjusted to real 2014 dollars.[4]

At least 100,000 pounds of black sea bass were landed in each of seven ports in six east coast states in 2014. These seven ports accounted for 52% of all commercial black sea bass landings in 2014 (table 4).[4] Detailed community profiles developed by the Northeast Fisheries Science Center's Social Science Branch can be found at www.mafmc.org/communities/.

Table 3: Ports reporting at least 100,000 lb of black sea bass landings in 2014, and corresponding percentage of total 2014 commercial scup landings. C = Confidential.[4]

Port name	Pounds of black sea bass landed	% of total commercial black sea bass landed	Number of vessels landing black sea bass
Ocean City, MD	230,099	10%	15
Cape May, NJ	227,536	10%	39
Point Pleasant, NJ	215,705	9%	46
Point Judith, RI	195,168	8%	139
Chincoteague, VA	131,678	6%	19
Montauk, NY	127,041	5%	94
Indian River, DE	102,722	4%	3

Over 205 federally-permitted dealers from Maine through North Carolina bought black sea bass in 2014. More dealers bought black sea bass in New York than in any other state (Table 5). All dealers purchased approximately $7.7 million worth of black sea bass in 2014.[4]

Table 4: Dealers, by state, who reported buying black sea bass in 2014. C = confidential.[4]

State	MA	RI	CT	NY	NJ	DE	MD	VA	NC
Number of dealers	34	30	17	48	31	C	4	14	27

5. Recreational Black Sea Bass Measures and Fishery Performance

Black sea bass support a sizable recreational fishery in the Mid-Atlantic region. Most recreational black sea bass landings occur in state waters when the fish migrate inshore during the warm summer months.

The Council develops coast-wide regulations for the recreational black sea bass fishery in federal waters, including a minimum size, a possession limit, and open seasons (Table 6). The ASMFC and member states develop recreational black sea bass regulations in state waters (Table 7).

Table 6: Federal recreational measures for black sea bass, north of Cape Hatteras, NC, 2005 through 2015.

Measure	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Minimum size (inches, total length)	12	12	12	12	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Possession limit	25	25	25	25	25	25	25	25	20	15	15
Open season	1/1-12/31	1/1-12/31	1/1-12/31	1/1-12/31	1/1-10/5	5/22-10/11 and 11/1-12/31	5/22-10/11 and 11/1-12/31	5/19-10/14 and 11/1-12/31	5/19-10/14 and 11/1-12/31	5/19-9/18 and 10/18-12/31	5/15-9/21 and 10/22-12/31

Table 7: Black sea bass recreational fishing measures in 2015, by state.

State	Minimum Size (inches)	Possession Limit	Open Season
Maine	13	10 fish	May 19 - September 18
New Hampshire	13	10 fish	January 1 - December 31
Massachusetts	14	8 fish	May 23 - August 27
Rhode Island	14	1 fish	July 2 - August 31
		7 fish	September 1 - December 31
Connecticut	14	3 fish	June 1 - August 31
		5 fish	September 1- December 31
Connecticut authorized party/charter monitoring program vessels	14	8 fish	June 21-December 31
New York	14	8 fish	July 15 - October 31
		10 fish	November 1 - December 31
New Jersey	12.5	2 fish	July 1 - July 31
		15 fish	May 27 - June 30; October 22- December 31
Delaware	12.5	15 fish	May 15 - September 21 and October 22 - December 31
Maryland	12.5	15 fish	May 15 - September 21 and October 22 - December 31
Potomac River Fisheries Commission	12.5	15 fish	May 15 - September 21 and October 22 - December 31
Virginia	12.5	15 fish	May 15 - September 21 and October 22 - December 31
North Carolina (north of Cape Hatteras)	12.5	15 fish	May 15 - September 21 and October 22 - December 31

Recreational data for years 2004 and later are available from the Marine Recreational Information Program (MRIP). For years prior to 2004, recreational data were generated by the Marine Recreational Fishery Statistics Survey (MRFSS). Recreational black sea bass catch and landings peaked in 1986 when an estimated 29.17 million fish were caught and 21.90 million fish were landed by recreational fishermen from Maine to North Carolina. Recreational catch reached a low of 5.30 million fish in 1981, and recreational landings were at their lowest in 2011, when 0.88 million fish were landed. In 2014, an estimated 3.78 million pounds of black sea bass were landed, corresponding to 167% of the 2014 recreational harvest limit (Table 8).[5]

For-hire vessels carrying passengers in federal waters must obtain a federal party/charter permit. In 2014, 763 party and charter boats held federal recreational black sea bass permits. Many of these vessels also hold recreational permits for summer flounder and scup.[6]

Table 8: Estimated recreational black sea bass catch and landings from 1981 through 2014 from Maine through North Carolina (includes all of North Carolina).[5]

Year	Catch (thousands of fish)	Landings (thousands of fish)	Landings (thousands of pounds)
1981	5,301	2,734	1,628
1982	11,615	10,249	10,054
1983	8,707	5,631	4,530
1984	4,330	2,491	1,961
1985	7,131	4,216	2,540
1986	29,167	21,904	12,461
1987	5,912	3,467	2,392
1988	9,363	4,060	3,945
1989	7,000	4,649	3,621
1990	9,622	4,269	3,047
1991	11,224	5,458	4,316
1992	8,296	3,869	2,914
1993	9,451	6,197	4,985
1994	7,688	3,571	3,054
1995	14,481	6,887	6,339
1996	8,437	3,764	4,125
1997	11,088	4,868	4,399
1998	5,699	1,259	1,290
1999	7,758	1,412	1,697
2000	17,667	3,755	4,122
2001	14,626	3,006	3,596
2002	15,080	3,421	4,442
2003	12,649	3,392	3,449
2004	8,884	1,925	2,340
2005	8,358	1,489	2,181
2006	8,729	1,392	1,911
2007	9,601	1,630	2,338
2008	11,102	1,342	2,092
2009	9,875	1,909	2,672
2010	11,133	2,335	3,361
2011	5,794	881	1,267
2012	14,553	1,946	3,305
2013	10,700	1,239	2,390
2014	12,109	2,200	3,783

In 2014, about 61% of black sea bass landed by recreational fishermen were caught in state waters, and about 39% in federal waters (Table 9). Landings by state indicate that the majority of black sea bass were landed in Massachusetts, Connecticut, New York, and New Jersey. These four states accounted for about 82% of all recreational landings from Maine to North Carolina in 2014 (Table 10).[5]

Table 9: Estimated percentage of black sea bass recreational landings (in numbers of fish) in state vs. federal waters, from Maine through North Carolina, 2005 through 2014.[5]

Year	State waters	Federal waters
2005	29.9%	70.1%
2006	34.9%	65.1%
2007	34.8%	65.2%
2008	60.3%	39.7%
2009	67.5%	32.5%
2010	72.1%	27.9%
2011	63.8%	36.2%
2012	72.6%	27.4%
2013	66.6%	33.4%
2014	60.9%	39.1%
2005-2014 average	**56.3%**	**43.7%**
2012-2014 average	**66.7%**	**33.3%**

Table 10: State-by-state contribution (as a percentage) to total recreational landings of black sea bass (in numbers of fish), Maine through North Carolina, in 2013 and 2014.[5]

State	2013	2014
Maine	0.0%	0.0%
New Hampshire	1.0%	0.0%
Massachusetts	20.4%	19.4%
Rhode Island	5.7%	9.7%
Connecticut	8.6%	20.7%
New York	27.5%	18.8%
New Jersey	26.9%	22.9%
Delaware	2.1%	1.2%
Maryland	2.1%	3.1%
Virginia	1.7%	0.7%
North Carolina	4.0%	3.5%

About 63% of recreational black sea bass landings in 2014 were caught by anglers fishing on private or rental boats, about 36% from anglers aboard party or charter boats, and about 1% from shore (Table 11).[5]

Table 11: The number of black sea bass landed (in thousands of fish) by recreational fishing mode, Maine through North Carolina, 1981-2014.[5]

Year	Shore (thousands of fish)	Party/charter (thousands of fish)	Private/rental (thousands of fish)	Total (thousands of fish)
1981	452	1,440	841	2,734
1982	81	8,104	2,063	10,249
1983	222	4,006	1,404	5,631
1984	98	1,128	1,265	2,491
1985	163	2,393	1,660	4,216
1986	1,022	16,695	4,187	21,904
1987	72	1,157	2,238	3,467
1988	141	1,691	2,228	4,060
1989	238	1,992	2,420	4,649
1990	289	2,269	1,710	4,269
1991	251	2,586	2,621	5,458
1992	45	2,043	1,780	3,869
1993	55	4,580	1,562	6,197
1994	243	2,006	1,322	3,571
1995	276	5,197	1,414	6,887
1996	71	2,632	1,062	3,764
1997	8	3,950	909	4,868
1998	7	778	474	1,259
1999	19	621	771	1,412
2000	177	1,798	1,780	3,755
2001	14	1,827	1,165	3,006
2002	17	2,066	1,338	3,421
2003	11	2,073	1,308	3,392
2004	9	698	1,217	1,925
2005	13	606	869	1,489
2006	49	731	613	1,392
2007	10	910	710	1,630
2008	9	480	853	1,342
2009	24	442	1,443	1,909
2010	6	520	1,809	2,335
2011	8	311	562	881
2012	6	702	1,238	1,946
2013	12	191	1,036	1,239
2014	20	794	1,386	2,200

References

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[4] Unpublished NMFS dealer data.

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[6] Unpublished NMFS permit data.

[7] Unpublished NMFS Vessel Trip Report (VTR) data.